THE GENUS HERMETIA IN THE UNITED STATES (DIPTERA, STRATIOMYIDAE).

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A study of flies of the genus *Hermetia* has brought to light two very distinct species which are, apparently, undescribed. Since no key exists for the identification of the species known from the United States, and since this list of species is probably complete for our range, a brief review of our species is herein presented. This review is only preliminary to a monograph of the species of the world, which is now in the course of preparation.

Hermetia may be distinguished from all other North American genera of Stratiomyidae by the peculiar structure of the last antennal piece (sometimes referred to as the style of the flagellum); this segment is elongated, being as long as or longer than the remaining segments of the flagellum taken together, is flattened, and is fringed on both edges with short, dense, hairs. The discal cell gives off four veins, the cross-vein m-cu being absent, and the scutellum is devoid of spines. These flies are of moderate to large size for Stratiomyidae, and, as a rule, are moderately elongated and slender.

The immature stages of *H. illucens* are well known; the larval habits are varied. Malloch (1917) describes and figures the larva and puparium and cites records of its being bred from beeswax, catsup, decaying vegetables, and potatoes. Larvae have been reported from the cadaver of a man in the Canal Zone (Dunn, 1916); from bee-hives (Copello, 1926); from dead crabs, in Samoa (Ricardo, 1929), and from the nests of Melponidae (Borgmeier, 1930). We also have unpublished records of intestinal myiasis being caused in man by this species. Engelhardt (1928) records taking larvae of *H. aurata* in damp soil, under logs, in Arizona. *H. hunteri* was bred from cactus in Texas.

The following key will serve to identify our species. *H. hunteri* was placed from its description, for the sake of completeness; the others I have examined personally. Several species not occurring in our range have been included in order to show affinities.

Hermetia—Key to Species.

1. Eyes bare 2
   Eyes distinctly pilose 4
2. Almost wholly black species; femora and tibiae mostly black. 3
   Predominantly yellow; legs brown ..... *hunteri* Coq.

3. Squamae white, white-haired ..... **nucis** n. sp.
   Squamae black, black-haired ..... *illucens* L.
4. Face, from anterior view, rounded 5
   Face, from anterior view, acute, conically projecting 7
5. Abdomen black in ground color 6
   Abdomen red or reddish in ground color ..... *aurata* Bell.
6. Yellow pubescence on whole of segments two to four. *chrysopila* Lw.
   Yellow pubescence confined to apices of these segments. *eiseni* Tns.
7. Legs entirely yellow; abdomen terete ..... *comstocki* Will.
   At least the femora largely black; abdomen more or less flattened 8
8. Femora and tibiae black; second abdominal segment with a pair of translucent spots ..... *albitarsis* F.
   Tibiae pale; second abdominal segment concolorous 9
9. Head black; thorax black 10
   Head yellow; thorax mostly yellow, golden-haired. *concinna* Will.
10. Thorax yellow-pilose ..... *lativentris* Bell.
    Thorax black-pilose ..... **reinhardi** n. sp.

Hermetia hunteri Coq.

H. hunteri Coquillett, Canad. Ent., 41: 212, 1909. Texas.

Hermetia nucis n. sp.

Close to *H. illucens* Linn., but the abdomen is wholly black dorsally in the male, and with at most a pair of small, yellow opaque spots in the female; the abdomen is more pointed apically; the vertex, in the male, is much narrower; and the squamae are white, with a white fringe. The head also has a greater quantity of yellow pile.

Male. Head black; eyes margined with yellow along the vertex and to a short distance below the occipital triangle; a yellow spot along each eye in the middle of the front, and another below the antennae, this latter extending laterally to the eyes and along the inner occular margins. Facial projection pointed below. Vertex narrow, the distance from the ocellar triangle to each eye being no greater than the base of the ocellar triangle. Eyes bare. First antennal segment but slightly longer than the second. Pile of face black, that of front black mixed with yellow. Thorax black, clothed with appressed silvery tomentum; some semi-erect white intermixed with a little black pile laterally; pleura white-pilose. Scutellum black. Squamae white or yellow, with a fringe of white

hairs. Abdomen elongated, somewhat ovate, strongly tapering apically; black, wholly opaque, and with at most a little reddish-brown laterally; its vestiture consists of short, white, appressed pile, with a much longer silvery pile forming triangles at the outer posterior angles of segments two to four. A little black pile laterally on segment one. Venter black, pile short, white, inconspicuous. Legs black, yellowish-pilose; the posterior tibiae yellow on the basal fourth; tarsi yellow, the apical one or two segments darkened and black-haired. Length, 8–15 mm.

Female. Similar to the male; the first antennal segment is longer in proportion to the second; the vertex is wider; there is a pair of small yellow spots on the first abdominal tergite, these being more expanded and (sometimes) transparent on the sternite. Differs otherwise only sexually. The female is more difficult to distinguish from *H. illucens,* but the white squamae will serve to distinguish the species in both sexes.

Holotype: Male, Santo Tomás, P. de Zapata, Cuba, May 5–9, 1927 (S. C. Bruner & J. Acuña).

Allotype: Female, Jobabo, Cuba, April 20, 1925, T. P. R. F. Ent. No. 331 (C. F. Stahl).

Paratypes: 2 males, Cuba, E. E. A. de Cuba No. 9178; male, Lake Worth, Florida, Nov. 4, 1928; Female, Lake Worth, Fla., Nov. 6, 1928.

The male paratypes labelled "E. E. A. de Cuba 9178" were reared from the dead tissue of the coconut. The Florida specimens are considerably larger than those from Cuba, but evidently conspecific. Holotype, in the writer's collection; Cuban paratypes, in the Cuban National Collection; Florida paratypes, in the collection of Dr. S. W. Bromley.

Hermetia illucens Linn.*

This common species occurs in the moister tropical and subtropical regions throughout the world. Its distribution in North America is as follows: N. C.: Chadbourn, Nov. 27, 1925 (Bromley); Willard, Oct. 5, 1934 (F. S. Blanton). S. C., Ga., Fla., Ala., La., Texas: numerous records. Cuba, Porto Rico: common. Ark.: Carroll Co., Sept. 17, 1932 (Geo. E. Gould). Okla.: Wilburton, June 8, 1934, and Hugo, June 21, 1934 (A. E. Pritchard); Smithville, June 10, 1934, and Idabel, Oct. 7, 1931 (E. Hixson).

* For references and synonymy, see Aldrich's *Catalogue,* for starred species.

Ariz.: Tucson, Aug. 1 (A. A. Nichol), Sept. 29 (C. T. Vorhies), Sept. 26 (F. H. Parker), Oct. (J. M. Breazeale); Globe, Sept. (Duncan); Mesa, April (Nichol). Calif.: Riverside, numerous, June to Oct. (Timberlake); April 8 (H. H. Smith). Mexico & Central America: Common.

Hermetia aurata Bellard.*

This and the two following species are closely related to each other. The amount of black on the scutellum is apparently a variable character.

Distribution. Texas: Donna, May, June, July, and Oct. (J. W. Monk). Calif.: San Diego, July 30, 1921, and Aug. 20, 1921. Mexico: Morelia (type); Lower California (recorded by Townsend).

Hermetia chrysopila Loew.*

Distribution. Texas: Type. Austin, Apr. 15 to May 19; Eastland Co., April 17 to May 16, 1921 (Grace O. Wiley); Austin (R. H. Painter). N. M.: Magdalena Mts., 8,400 ft., July 23, 1930 (E. R. Tinkham). Ariz.: Baboquivari Mts., April (Duncan); S. Catalina Mts., April (Duncan); Globe, Aug. (Duncan). Kansas: Clark Co., June (F. H. Snow); Manhattan, June 4 & 8, 1932 (C. W. Sabrosky). Colo.: Boulder, May 26, 1934 (D. F. Aultz). This Colorado record is surprising; it is a northern record for the genus.

Hermetia eiseni Townsend.*

Lower California (type). The type specimens have black markings on the tibiae; these are lacking in the two preceding species. Otherwise, except for the abdominal pile, they are much the same.

Hermetia comstocki Williston.*

Mimics *Polistes*. Distribution. Ariz.: Type. Ramsey Cañon, Huachuca Mts. (F. X. Williams); Huachuca Mts. (R. H. Beamer); Sierra Ancha Mts., July (Duncan); S. Catalina Mts., April (Duncan); Baboquivari Mts., Apr. (Duncan). Sonora, Mexico: recorded by Osten Sacken.

Hermetia concinna Williston.*

Ariz.: Pimal Mts.; Baboquivari Mts. N. M.: recorded by Williston. Texas: Chinati Mts. (Tinkham).

Hermetia reinharti n. sp.

This species is close to *H. lativentris* Bell., but the black pile of the thorax will readily distinguish it.

Male. Head black; a spot contiguous with each eye in the middle of the front, the region at the base of the antennae and extending onto the facial prominence, and the inner ocular margins of the face, a dirty yellow. Frontal protuberance prominent, elevated distinctly above the ocellar triangle. Eyes clearly black-pilose. Antennae black; first and second segments yellow; the first segment more than twice the length of the second. Pile of head largely black, but interspersed with yellow pile on the vertex and in the depressions of the front. Thorax and scutellum entirely black and black-pilose, with suggestions of reddish yellow along the sides of the dorsum, the posterior angles, and the extreme apex of the scutellum; sternites with a slightly reddish cast. Abdomen orange in color; the first segment black dorsally, except for a small amount of yellowish toward the apex, and black on the basal half ventrally; second segment with a median black stripe, about one-eighth the width of the segment, which connects basally with the black of the first segment and extends apically almost to the apex of the second; the black of the first segment also encroaches upon the second in the form of narrow lateral margins which gradually fade into orange about the middle of the second segment; the pale coloration of the second segment is more yellowish than on the following segments, both dorsally and ventrally. Coxae, trochanters, and femora black, with somewhat of a reddish tinge, black-haired; tibiae and tarsi wholly pale yellow, with concolorous pile. Wings rather strongly infuscated with brown, especially near the costal margins and adjoining the stronger veins. Length, 16 mm.

Holotype: Male, Oilley, Texas, May 6, 1920, No. 3108 (H. J. Reinhard). H. J. Reinhard Collection.

Paratype: Male, Travis Co., Texas, summer, 1931 (J. K. G. Silvey).

The paratype is somewhat smaller than the holotype, being about 11 mm. in length; otherwise, it agrees with the above description.

Literature Cited.

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The American Species of Lipoptena (Diptera, Hippoboscidae).—A revision of the deer parasites of the genus *Lipoptena* was sent in for publication over a year ago. Since there seems to be no prospect of having it appear in the near future, the following summary will be useful. I recognize in the Americas four species: 1. **L. ferrisi,** new name, a common parasite of western black-tailed deer, mule deer and western white tailed deer in British Columbia, Oregon, California and Montana. This is the species described and figured by Ferris and Cole as *L. subulata* (1922, Parasitology, XIV, p. 187, figs. *2c* and 4).—2. *L. cervi* (Linnaeus), an introduced species in New Hampshire, Massachusetts and Pennsylvania, on Virginia deer. *L. subulata* Coquillett is a synonym.—3. *L. depressa* (Say), a common parasite of western black-tailed deer and mule deer. I have seen it from British Columbia, Washington State, Oregon, South Dakota, California, and Montana.—4. *L. mazamae* Rondani, a common parasite of tropical deer and brocket throughout Central and South America, and of eastern white-tailed deer in Georgia, Texas, Florida and South Carolina. *L. depressa* var. *mexicana* Townsend, *L. conifera* Speiser, and *L. surinamensis* Bau I regard as synonyms.—J. Bequaert, Harvard University Medical School, Boston, Mass.